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# EUROPEAN PATENT APPLICATION

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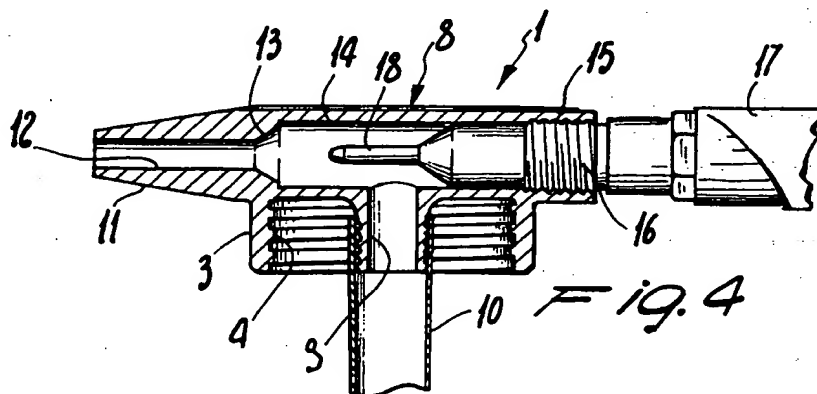
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⑤④ Closure structure particularly for nebulizable liquid containers.

⑤⑦ The closure structure comprises a disk-like element with an optionally threaded axial ring (3), to be used in particular for nebulizable liquid containers. Furthermore a substantially perpendicular or inclined tubular element (8) extends on the disk-like element, is monolithic therewith and is connected to a cou-

pling (9), which is internal to the ring (3), for a liquid drawing duct (10). The tubular element has a first end shaped like a dispenser nozzle and a second threaded end for coupling to a gun (17) for dispensing gases, mixtures of gases and/or fluids under pressure.



The present invention relates to a closure structure particularly for containers of nebulizable liquids, for example paints, oils, etc.

Dispensers substantially constituted by two concentric tubular elements are currently used to spray nebulizable liquids; the inner tubular element is connected to a pressurized air duct and the outer one is connected to a liquid drawing duct which extends perpendicular from said outer tubular element inside a threaded ring to be screwed to the mouth of a liquid container.

During periods of non-use, the dispenser is unscrewed from the container, and a ring closure is placed on said container.

In order to spray nebulizable liquids it is therefore currently necessary to have available a compressed air hose, a dispenser and the container usually in a sealed package with a tear-open closure membrane.

The aim of the present invention is to provide a closure which, optionally provided to a nebulizable liquid container, can also be used as a dispenser by means of a simple coupling to a compressed-air dispenser gun.

A consequent primary object is to provide nebulizable liquid containers with a sort of disposable dispenser.

Another object is to provide a closure which can be manufacture on a large scale and at low cost for example by molding thermoplastic materials, by pressure die-casting metallic material, etc.

Not least object is to provide a closure which can be marketed even individually and used as a low-cost dispenser.

This aim, these objects and others which will become apparent hereinafter are achieved by a closure structure particularly for nebulizable liquid containers, comprising a disk-like element with an optionally threaded axial ring, characterized in that a tubular element extends on said disk-like element, and is connected to a coupling which is internal to said ring for a liquid drawing duct, said tubular element being substantially perpendicular or inclined and having a first end shaped like a dispenser nozzle and a second end provided with means for coupling to a gun for dispensing gases, mixtures of gases and/or fluids under pressure.

Further characteristics and advantages of the invention will become apparent from the detailed description of an embodiment thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a perspective view of a closure structure according to the invention, arranged on a nebulizable liquid container;

figure 2 is a side view of the closure structure of figure 1 during operation as nebulizable liquid dispenser, coupled to a liquid container and to a

gun for dispensing pressurized gas;

figure 3 is a perspective view of the mouth of the container, of the closure structure according to the invention and of the end of the gun for dispensing pressurized gas;

figure 4 is a sectional view of the closure structure according to the invention, coupled to the gun for dispensing gas under pressure.

With reference to the above figures, the closure structure according to the invention is generally indicated by the reference numeral 1 and comprises a disk-like element 2 from which an axial ring 3 extends downward; said ring is conveniently provided with an internal thread 4 for coupling on a complementarily threaded mouth 5 which extends from a nebulizable liquid container 6, for example paint, oil, etc.

Advantageously, said mouth 5 is provided with a tear-open sealing membrane 7 in order to preserve the integrity of the contents prior to sale.

According to the invention, a tubular element 8 extends diametrically on said disk-like element, is monolithic therewith, perpendicular to the axis and connected to an axial coupling 9 provided inside the ring 3.

Said coupling 9, which is appropriately grooved or threaded, is suitable for being inserted inside a tube 10 for drawing the liquid of the container 6.

Still according to the invention, said tubular element 8 has a first end 11 which is tapered like a dispenser nozzle with a portion of internal duct 12 which has a reduced diameter and is blended, by means of a frustum-shaped portion 13, to the rest of the duct 14, which has a greater diameter, of said element 8.

A second end 15 of the element 8 is threaded and is suitable for coupling to a complementarily threaded end portion 16 of a known gun 17 for dispensing gases, mixtures of gases and/or fluids under pressure, for example compressed air.

The dispenser 18 of the gun 17 thus penetrates inside the tubular element 8 and defines, inside the duct 14, a chamber in which nebulization occurs between the compressed air and the liquid, which is drawn from the inside of the container 6 by negative pressure.

The closure structure 1 is completed by a vent hole 19 which passes axially through the disk-like element 2.

From what has been described above it can therefore be easily understood that the structure according to the invention has the dual function of closure suitable for opening the sealing membrane 7 and of dispenser when it is necessary to spray the liquid of the container 6.

In this case the simple coupling of the gun 17, conveniently supplied with compressed air, is necessary.

The closure structure according to the invention can be either included in the package of the container 6 and thus disposed when said container has depleted its contents, or can be sold separately for use on any container provided with a mouth.

Naturally, the ring 3 may also be not threaded but provided with annular grooves, or may even be smooth, to be coupled by means of simple insertion on the mouth.

As regards the preferred materials, they can either be of the thermoplastic type or be pressure die-cast metals so that large-scale and low-cost production is allowed.

In practice it has thus been observed that the closure structure according to the invention has achieved the intended aim and objects.

In practice, the materials employed, so long as compatible with the contingent use, as well as the dimensions, may be any according to the requirements.

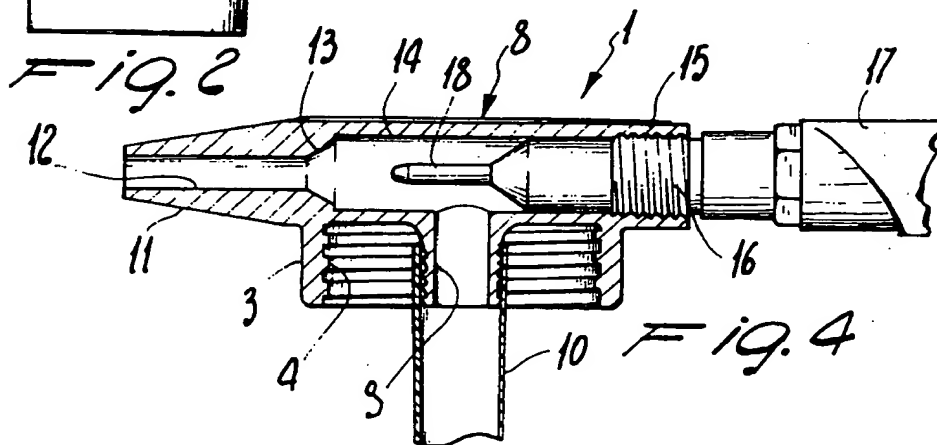
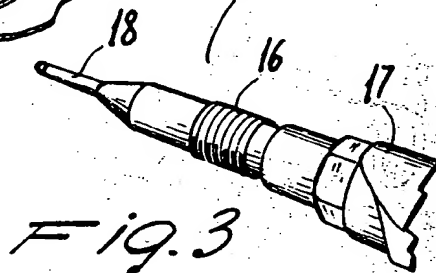
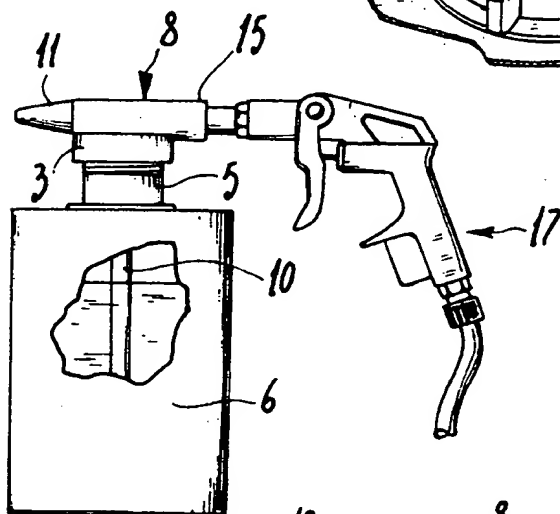
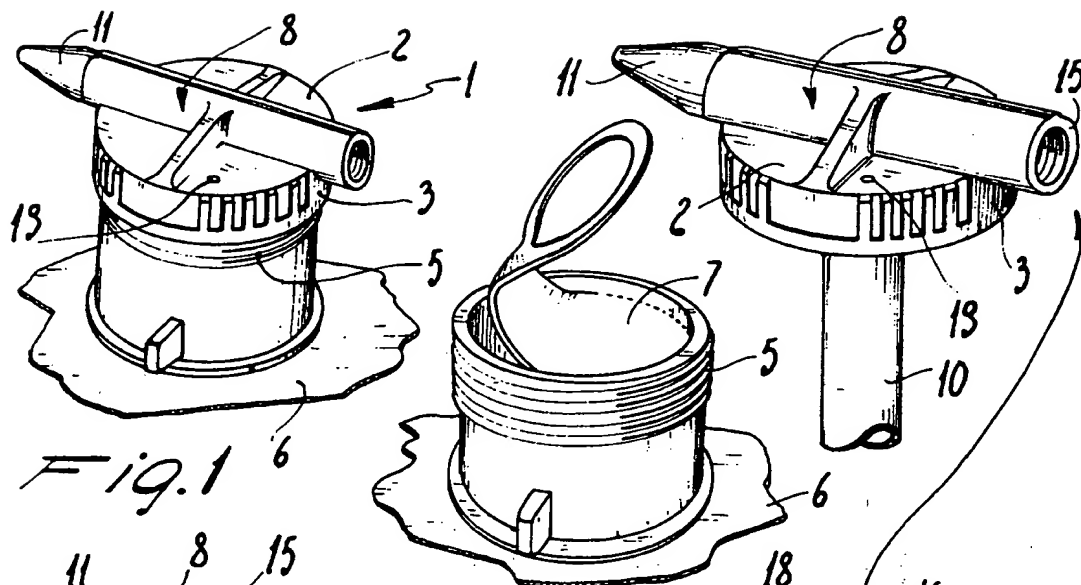
Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the scope of each element identified by way of example by such reference signs.

#### Claims

1. Closure structure particularly for nebulizable liquid containers, comprising a disk-like element (2) with an optionally threaded axial ring (3), characterized in that a tubular element (8) extends on said disk-like element, and is connected to a coupling (9) which is internal to said ring (3) for a liquid drawing duct (10), said tubular element (8) being substantially perpendicular or inclined and having a first end (11) shaped like a dispenser nozzle and a second end (15) provided with means for coupling to a gun (17) for dispensing gases, mixtures of gases and/or fluids under pressure.
2. Closure structure according to claim 1, characterized in that said tubular element (8) is in a diametrical position with respect to said disk-like element (3) and is monolithic therewith.
3. Closure structure according to claim 1, characterized in that said internal coupling (9) is axial with respect to said ring (3).
4. Closure structure according to claim 1, characterized in that said first end (11) of said tubular element (8) is tapered and is internally

provided with a portion (12) of a duct having a smaller diameter than the rest (14), in which the end of said gun (17) is inserted, the two duct portions (12,14) being blended by a frustum-shaped portion (13).

5. Closure structure according to claim 1, characterized in that said coupling means are constituted by a threaded portion which is suitable for engaging a complementarily threaded end portion (16) of said gun (17).





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## EUROPEAN SEARCH REPORT

Application Number

EP 91 12 1507

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	CH-A-270 917 (EHRENZWEIG) * page 1, line 52 - line 62 * * page 2, line 40 - line 61; figure 1 *	1-3, 5	B05B7/24
A	FR-A-2 586 944 (CLOUP) * page 2, line 22 - page 3, line 3; figure 1 *	1, 2, 4	
A	US-A-3 180 580 (SCHEDEL) * column 3, line 12 - column 4, line 4; figures 1-3 *	1-3	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			B05B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 25 FEBRUARY 1992	Examiner JUGUET J.M.
<b>CATEGORY OF CITED DOCUMENTS</b>			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure F : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons A : member of the same patent family, corresponding document	